

ABSTRACT OF THE DISCLOSURE

Fuel mixtures for direct methanol fuel cells are disclosed. The fuels include methanol and additives that react with water to produce methanol and other easily electro-oxidizable compounds including dimethyloxymethane, methylorthoformate, tetra-
5 ramethylorthocarbonate, trimethylborate, and tetramethylorthosilicate. Other additives to improve safety and efficiency of the fuel cell include sulfonated activated carbon particles and metal hydrides, such as LiAlH₄, NaBH₄, LiBH₄, (CH₃)₂NHBH₃, NaAlH₄, B₂H₆, NaCNBH₃, CaH₂, LiH, NaH, KH or sodium bis (2-methoxyethoxy) dihydridaluminate.